

# 3
7

SEQUENCE LISTING

<110> Petrini, John H.J.
Morgan, William Franklin
Maser, Richard Scott
Carney, James Patrick

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<141> 1998-04-27

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Thr Ala Asn Phe Ser Val Thr Asn Leu Ser Gln Thr Asp Glu Ile Pro
50 55 60
Val Leu Thr Leu Lys Asp Asn Ser Lys Tyr Gly Thr Phe Val Asn Glu
65 70 75 80
Glu Lys Met Gln Asn Gly Phe Ser Arg Thr Leu Lys Ser Gly Asp Gly
85 90 95
Ile Thr Phe Gly Val Phe Gly Ser Lys Phe Arg Ile Glu Tyr Glu Pro
100 105 110
Leu Val Ala Cys Ser Ser Cys Leu Asp Val Ser Gly Lys Thr Ala Leu
115 120 125
Asn Gln Ala Ile Leu Gln Leu Gly Gly Phe Thr Val Asn Asn Trp Thr
130 135 140
Glu Glu Cys Thr His Leu Val Met Val Ser Val Lys Val Thr Ile Lys
145 150 155 160
Thr Ile Cys Ala Leu Ile Cys Gly Arg Pro Ile Val Lys Pro Glu Tyr
165 170 175
Phe Thr Glu Phe Leu Lys Ala Val Gln Ser Lys Lys Gln Pro Pro Gln
180 185 190
Ile Glu Ser Phe Tyr Pro Pro Leu Asp Glu Pro Ser Ile Gly Ser Lys
195 200 205
Asn Val Asp Leu Ser Gly Arg Gln Glu Arg Lys Gln Ile Phe Lys Gly
210 215 220
Lys Thr Phe Ile Phe Leu Asn Ala Lys Gln His Lys Lys Leu Ser Ser
225 230 235 240
Ala Val Val Phe Gly Gly Glu Ala Arg Leu Ile Thr Glu Glu Asn
245 250 255
Glu Glu Glu His Asn Phe Phe Leu Ala Pro Gly Thr Cys Val Val Asp
260 265 270
Thr Gly Ile Thr Asn Ser Gln Thr Leu Ile Pro Asp Cys Gln Lys Lys
275 280 285
Trp Ile Gln Ser Ile Met Asp Met Leu Gln Arg Gln Gly Leu Arg Pro
290 295 300
Ile Pro Glu Ala Glu Ile Gly Leu Ala Val Ile Phe Met Thr Thr Lys
305 310 315 320
Asn Tyr Cys Asp Pro Gln Gly His Pro Ser Thr Gly Leu Lys Thr Thr

325 330 335
Thr Pro Gly Pro Ser Leu Ser Gln Gly Val Ser Val Asp Glu Lys Leu
340 345 350
Met Pro Ser Ala Pro Val Asn Thr Thr Thr Tyr Val Ala Asp Thr Glu
355 360 365
Ser Glu Gln Ala Asp Thr Trp Asp Leu Ser Glu Arg Pro Lys Glu Ile
370 375 380
Lys Val Ser Lys Met Glu Gln Lys Phe Arg Met Leu Ser Gln Asp Ala
385 390 395 400
Pro Thr Val Lys Glu Ser Cys Lys Thr Ser Ser Asn Asn Asn Ser Met
405 410 415
Val Ser Asn Thr Leu Ala Lys Met Arg Ile Pro Asn Tyr Gln Leu Ser
420 425 430
Pro Thr Lys Leu Pro Ser Ile Asn Lys Ser Lys Asp Arg Ala Ser Gln
435 440 445
Gln Gln Gln Thr Asn Ser Ile Arg Asn Tyr Phe Gln Pro Ser Thr Lys
450 455 460
Lys Arg Glu Arg Asp Glu Glu Asn Gln Glu Met Ser Ser Cys Lys Ser
465 470 475 480
Ala Arg Ile Glu Thr Ser Cys Ser Leu Leu Glu Gln Thr Gln Pro Ala
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Thr Pro Ser Leu Trp Lys Asn Lys Glu Gln His Leu Ser Glu Asn Glu
500 505 510
Pro Val Asp Thr Asn Ser Asp Asn Asn Leu Phe Thr Asp Thr Asp Leu
515 520 525
Lys Ser Ile Val Lys Asn Ser Ala Ser Lys Ser His Ala Ala Glu Lys
530 535 540
Leu Arg Ser Asn Lys Lys Arg Glu Met Asp Asp Val Ala Ile Glu Asp
545 550 555 560
Glu Val Leu Glu Gln Leu Phe Lys Asp Thr Lys Pro Glu Leu Glu Ile
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Asp Val Lys Val Gln Lys Gln Glu Glu Asp Val Asn Val Arg Lys Arg
580 585 590
Pro Arg Met Asp Ile Glu Thr Asn Asp Thr Phe Ser Asp Glu Ala Val
595 600 605
Pro Glu Ser Ser Lys Ile Ser Gln Glu Asn Glu Ile Gly Lys Lys Arg
610 615 620

Glu Leu Lys Glu Asp Ser Leu Trp Ser Ala Lys Glu Ile Ser Asn Asn
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Asp Lys Leu Gln Asp Asp Ser Glu Met Leu Pro Lys Lys Leu Leu
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Thr Glu Phe Arg Ser Leu Val Ile Lys Asn Ser Thr Ser Arg Asn Pro
660 665 670
Ser Gly Ile Asn Asp Asp Tyr Gly Gln Leu Lys Asn Phe Lys Lys Phe
675 680 685
Lys Lys Val Thr Tyr Pro Gly Ala Gly Lys Leu Pro His Ile Ile Gly
690 695 700
Gly Ser Asp Leu Ile Ala His His Ala Arg Lys Asn Thr Glu Leu Glu
705 710 715 720
Glu Trp Leu Arg Gln Glu Met Glu Val Gln Asn Gln His Ala Lys Glu
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Lys Tyr Gly Thr Phe Val Asn Glu Glu Lys Met Gln Asn Gly Phe Ser

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Ser Ser Asp Leu Lys His Ser Ser Leu Cys Leu Val Asn Lys Gly Lys
35 40 45
Leu Thr Ser Leu Asn Lys Lys Phe Met Lys Val Gly Glu Thr Phe Thr
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35 40 45
Glu Asn Glu Val Asp Phe Ile Leu Leu Gly Gly Asp Leu Phe His Glu
50 55 60
Asn Lys Pro Ser Arg Lys Thr Leu His Thr Cys Leu Glu Leu Leu Arg
65 70 75 80
Lys Tyr Cys Met Gly Asp Arg Pro Val Gln Phe Glu Ile Leu Ser Asp
85 90 95
Gln Ser Val Asn Phe Gly Phe Ser Lys Phe Pro Trp Val Asn Tyr Gln
100 105 110
Asp Gly Asn Leu Asn Ile Ser Ile Pro Val Phe Ser Ile His Gly Asn
115 120 125
His Asp Asp Pro Thr Gly Ala Asp Ala Leu Cys Ala Leu Asp Ile Leu
130 135 140
Ser Cys Ala Gly Phe Val Asn His Phe Gly Arg Ser Met Ser Val Glu
145 150 155 160
Lys Ile Asp Ile Ser Pro Val Leu Leu Gln Lys Gly Ser Thr Lys Ile
165 170 175
Ala Leu Tyr Gly Leu Gly Ser Ile Pro Asp Glu Arg Leu Tyr Arg Met
180 185 190
Phe Val Asn Lys Lys Val Thr Met Leu Arg Pro Lys Glu Asp Glu Asn
195 200 205
Ser Trp Phe Asn Leu Phe Val Ile His Gln Asn Arg Ser Lys His Gly
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Ser Thr Asn Phe Ile Pro Glu Gln Phe Leu Asp Asp Phe Ile Asp Leu
225 230 235 240
Val Ile Trp Gly His Glu His Glu Cys Lys Ile Ala Pro Thr Lys Asn
245 250 255
Glu Gln Gln Leu Phe Tyr Ile Ser Gln Pro Gly Ser Ser Val Val Thr
260 265 270

Ser Leu Ser Pro Gly Glu Ala Val Lys Lys His Val Gly Leu Leu Arg
275 280 285
Ile Lys Gly Arg Lys Met Asn Met His Lys Ile Pro Leu His Thr Val
290 295 300
Arg Gln Phe Phe Met Glu Asp Ile Val Leu Ala Asn His Pro Asp Ile
305 310 315 320
Phe Asn Pro Asp Asn Pro Lys Val Thr Gln Ala Ile Gln Ser Phe Cys
325 330 335
Leu Glu Lys Ile Glu Glu Met Leu Glu Asn Ala Glu Arg Glu Arg Leu
340 345 350
Gly Asn Ser His Gln Pro Glu Lys Pro Leu Val Arg Leu Arg Val Asp
355 360 365
Tyr Ser Gly Gly Phe Glu Pro Phe Ser Val Leu Arg Phe Ser Gln Lys
370 375 380
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His Arg Glu Gln Lys Glu Lys Thr Gly Glu Glu Ile Asn Phe Gly Lys
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Ile Asp Glu Glu Val Arg Arg Phe Arg Glu Thr Arg Gln Lys Asn Thr
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Thr Lys Asn Tyr Ser Glu Val Ile Glu Val Asp Glu Ser Asp Val Glu		
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Thr Ser Ser Ser Lys Ile Met Ser Gln Ser Gln Val Ser Lys Gly Val		
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<212> PRT

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Gly Asn Asp Thr Phe Val Thr Leu Asp Glu Ile Leu Arg Leu Ala Gln			
35	40	45	
Glu Asn Glu Val Asp Phe Ile Leu Leu Gly Gly Asp Leu Phe His Glu			
50	55	60	
Asn Lys Pro Ser Arg Lys Thr Leu His Thr Cys Leu Glu Leu Leu Arg			
65	70	75	80

Lys Tyr Cys Met Gly Asp Arg Pro Val Gln Phe Glu Ile Leu Ser Asp
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Gln Ser Val Asn Phe Gly Phe Ser Lys Phe Pro Trp Val Asn Tyr Gln
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Asp Gly Asn Leu Asn Ile Ser Ile Pro Val Phe Ser Ile His Gly Asn
115 120 125
His Asp Asp Pro Thr Gly Ala Asp Ala Leu Cys Ala Leu Asp Ile Leu
130 135 140
Ser Cys Ala Gly Phe Val Asn His Phe Gly Arg Ser Met Ser Val Glu
145 150 155 160
Lys Ile Asp Ile Ser Pro Val Leu Leu Gln Lys Gly Ser Thr Lys Ile
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Ala Leu Tyr Gly Leu Gly Ser Ile Pro Asp Glu Arg Leu Tyr Arg Met
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Phe Val Asn Lys Lys Val Thr Met Leu Arg Pro Lys Glu Asp Glu Asn
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Ser Thr Asn Phe Ile Pro Glu Gln Phe Leu Asp Asp Phe Ile Asp Leu
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Val Ile Trp Gly His Glu His Glu Cys Lys Ile Ala Pro Thr Lys Asn
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Glu Gln Gln Leu Phe Tyr Ile Ser Gln Pro Gly Ser Ser Val Val Thr
260 265 270
Ser Leu Ser Pro Gly Glu Ala Val Lys Lys His Val Gly Leu Leu Arg
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Ile Lys Gly Arg Lys Met Asn Met His Lys Ile Pro Leu His Thr Val
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Arg Gln Phe Phe Met Glu Asp Ile Val Leu Ala Asn His Pro Asp Ile
305 310 315 320
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325 330 335
Leu Glu Lys Ile Glu Glu Met Leu Glu Asn Ala Glu Arg Glu Arg Leu
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Gly Asn Ser His Gln Pro Glu Lys Pro Leu Val Arg Leu Arg Val Asp
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Tyr Ser Gly Gly Phe Glu Pro Phe Ser Val Leu Arg Phe Ser Gln Lys

370 375 380
Phe Val Asp Arg Val Ala Asn Pro Lys Asp Ile Ile His Phe Phe Arg
385 390 395 400
His Arg Glu Gln Lys Glu Lys Thr Gly Glu Glu Ile Asn Phe Gly Lys
 405 410 415
Leu Ile Thr Lys Pro Ser Glu Gly Thr Thr Leu Arg Val Glu Asp Leu
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Val Lys Gln Tyr Phe Gln Thr Ala Glu Lys Asn Val Gln Leu Ser Leu
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Asn Glu Glu Asp Asp Glu Val Arg Glu Ala Met Thr Arg Ala Arg Ala
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Leu Arg Ser Gln Ser Glu Glu Ser Ala Ser Ala Phe Ser Ala Asp Asp
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Leu Met Ser Ile Asp Leu Ala Glu Gln Met Ala Asn Asp Ser Asp Asp
545 550 555 560
Ser Ile Ser Ala Ala Thr Asn Lys Gly Arg Gly Arg Gly Arg Gly Arg
 565 570 575
Arg Gly Arg Gly Gln Asn Ser Ala Ser Arg Gly Gly Ser Gln Arg
 580 585 590
Gly Arg Ala Phe Lys Ser Thr Arg Gln Gln Pro Ser Arg Asn Val Thr
 595 600 605
Thr Lys Asn Tyr Ser Glu Val Ile Glu Val Asp Glu Ser Asp Val Glu
610 615 620
Glu Asp Ile Phe Pro Thr Thr Ser Lys Thr Asp Gln Arg Trp Ser Ser
625 630 635 640
Thr Ser Ser Ser Lys Ile Met Ser Gln Ser Gln Val Ser Lys Gly Val
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Asp Phe Glu Ser Ser Glu Asp Asp Asp Asp Pro Phe Met Asn Thr
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Ser Ser Leu Arg Arg Asn Arg Arg

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Ile Gly Ser Lys

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Phe Met Thr Thr Lys
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Lys

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Glu Glu Ser Leu Ala Asp Asp Leu Phe Arg

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